The Effects of Caricature-based Applications on the Preschool Children's Emotional Intelligence[*]

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Abstract: The main purpose of this study aims to investigate the effects of caricature-based applications on the emotional intelligence of preschool children. The working group of this study, which used dominant-less dominant mixed methods, consisted of two kindergartens in Tatvan district of Bitlis and 5-year-old children studying in these kindergartens. Data were collected using quantitative and qualitative data collection tools. The observation form prepared by the researchers was used for the quantitative data and the semi-structured interview form was used for the qualitative data. In addition, citations were taken from the studies of children by document analysis. Firstly, normality test was performed for the analysis of quantitative data. At the end of the test, the data were subjected to the Mann-Whitney U test and Wilcoxon Signed Sequences Test. To determine the effect size of the experimental application, Cohen's d values were examined. In the analysis of qualitative data, descriptive and content analysis methods were used. For the reliability of the qualitative data, the data obtained were digitized and frequency and percentage calculations were made. As a result of the study, it was seen that the caricature-based applications contributed to the emotional intelligence of the children in the experimental group.

Keywords: Caricature, caricature-based learning model, emotion, emotional intelligence

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Introduction

Caricature is an exaggeration of something and the transfer of this exaggeration to pictures. Caricatures, originally derived from Italian, are drawings that allow individuals to express thoughts in their minds through painting. Making the characters speak by attributing various meanings to the drawings in the caricature is its important feature. In these drawings used in caricatures, it is important to make comments and raise awareness by making people think about events rather than criticism (Cetin, 2012; Ozyilmaz Akamca, 2008). Such awareness is based on the first years of human history. Human beings drew various pictures on the cave walls to communicate with each other. These pictures drawn on the walls in ancient times were described as caricatures and undertook the task of concretizing what was intended to be conveyed. Today, however, it is seen that the caricatures colored using drawings in the pictures in books, magazines and comics come to the fore (Findik Donmez, 2013). It is known that caricatures used in different ways and purposes are widely used in education. Because caricature helps children understand the problems that occur in social life and produce solutions by developing both abstract and concrete thinking skills. It enables the events to be seen more clearly with the the drawings and colors used. It contributes to the connection between events and the development of thinking skills (Sidekli, Er, Yavaser & Aydin, 2014).

It is known that concept caricatures are used in education in order for children to embody knowledge, participate actively in the learning process and increase motivation. Because concept caricature contributes to the realization of educational purposes both with its structure and the way it deals with events (Cetin, 2012). In other words, these caricatures increase the success of the children in education and help the lesson to be fun. The lesson's being fun increases the motivation of the children (Erdag, 2011). Concept caricatures, whose main purpose is to question and criticize information and provide structuring of knowledge, can be used at the beginning, middle and end of the lesson. For this purpose, it develops high-level skills in children (Karaca, Kuzu & Çaliskan, 2020). Children who use high-level skills, such as problem solving, critical and reflective thinking, effectively use scientific processes in the lesson. Thus, scientific opinions in the educational environment become meaningful with this caricature (Alkis Kucukaydın, 2019). Thanks to meaningful information, the prior knowledge of children is revealed. Misconceptions of children who associate old and new knowledge with concept caricatures are minimized. With all these aspects, concept caricatures are highly preferred by teachers in educational environments (Baynazoglu, 2019). Using concept caricatures, teachers determine the student's learning preference/path, increase their interest in the lesson and enable them to associate the information they have learned with daily life. For this reason, concept caricatures can be used at every age and school level starting from pre-school education (Atasoy, Tekbiyik & Gulay, 2013; Celik, 2014). The teacher should not ignore some points in these caricatures, which are recommended for use in pre-school and other age groups.

For example, the teacher should keep the texts in the concept caricatures short. The topics in the texts should be related to daily life, and the ideas defended by the characters should be of equal status. The ideas addressed by these characters in the caricature should reveal misconceptions in children (Sancar & Koparan, 2019).

In addition to the concept caricatures in education, there are different caricatures. These are classified according to purpose, form, technique and fiction-structure. For their purpose, drawings in caricatures are fun and remarkable. They also contain thought-provoking elements. According to the format, caricatures are used in different age groups because they contain both written and non-written items. Written caricatures are preferred for children who can read and write, and unwritten caricatures are preferred for children who cannot read and write like pre-school children. Moreover, colorful caricatures are preferable examples for preschool children. Because moving, colorful materials are fun for preschool children. Colorful caricatures appealing to the perceptions, emotions and developmental stages of preschool children are included in the group classified according to their technique. There are colored and black-white drawings in the caricatures prepared according to their techniques. Finally, there is a caricature class based on fiction-structure. In such caricatures, events and facts are sequenced; the structure of occurrence is interconnected. These caricatures are not suitable for preschool children. The reason for this is that preschool children classify events in one dimension and have difficulty in establishing a cause-effect relationship between events. At the same time, preschool children; sometimes they may be extroverted and sometimes introverted individuals. They try to perceive, make sense of, and think using his intelligence, the information he has acquired through concrete perceptions. They want to be understood, ask questions and explore the outside world. They convey these desires with their emotions. Emotion is the tool that allows their inner world to reflect outside. Children use their social and emotional development effectively with this tool. Children express themselves with social, emotional development. They take their emotions under control (Sevgili Kocak, 2020). He/she learns to trust himself/herself and someone else. He/she works in harmony with his/her environment and enters an effective communication process (Kandir & Alpan, 2008). In other words, this development in the preschool period is seen as the basic building block in children's lives (Cetin, 2019). Given the view that the social-emotional development of preschool children is important, the Ministry of National Education (2013) included some gains in the education program. With the acquisition, children were given the opportunity to use their emotions and their emotional intelligence was supported (Ulutas & Macun, 2016). As it is known, emotion is called motusanima in Latin, "the soul that moves us". When emotions are combined with the mind, they have the ability to direct people (Baltaş, 2005). It is that the feelings that occur in the human cause certain changes in the body (Avci, 2017). In other words, emotion enables the perceived to be conceptualized in mind and experienced as an experience. The use of this opportunity by the individual as a skill is achieved with emotional intelligence. Emotional intelligence includes the ability to perceive emotions precisely and to use emotions.

Emotional intelligence (EI), which gained an important place in the world of science with the studies of Goleman (1995) in the mid-1990s, is the individual's awareness of his emotions, self-control and empathy skills (Dağ & Sarı, 2019). Goleman defined emotional intelligence as the ability to control emotions and understand the emotions of others (Cetinkaya, 2017). Mayer and Salovey express emotional intelligence as the ability to understand and use both his/her own emotions/thoughts and other people's feelings/thoughts. According to Cooper and Sawaf (2000), emotional intelligence is the effective use of human awareness and the power to make sense of emotions by the human mind. Köprülü, Turhan and Helvaci (2018) stated that emotional intelligence is the individual's ability to recognize and manage emotions. Thanks to this skill, children establish good communication with other individuals, socialize, use different types of intelligence, discover their learning style, and use their cognitive and affective awareness effectively in activities, such as caricature applications.

It is seen that emotional intelligence may affect many variables in human life. When the literature is examined, it has been observed that emotional intelligence has been examined with different variables in recent years. Koçak and İçmenoğlu (2012) linked the concepts of emotional intelligence and creativity, and Ulutaş and Macun (2016) investigated the role of teachers in supporting the emotional intelligence of preschool children. Other studies conducted focused on the relationship between emotional intelligence and communication skills of pre-school teacher candidates (Pınarcık, Salı & Altindis, 2016), emotional intelligence, assertive, aggressive, non- assertive behaviors of primary school students (Altunbas & Ozabaci, 2019), the relationship between the emotional intelligence levels of mothers and their peer bullying level in pre-school children (Pektane Gulmez, Gultekin, & Akduman Gunduz, 2019), caricature and argumentation levels (Baynazoğlu, 2019) and concept caricatures in the Science course (Karakus, 2019). However, to our knowledge, there is no study in which variables, such as caricature applications, preschool and emotional intelligence, are discussed together. In this respect, it is thought that this study will provide important information/feedback to the pre-school teachers, who are the implementers of the education program, for the first time in the literature.

Purpose of the research

The main purpose of the study is aims to investigate the effects of caricature-based applications on the emotional intelligence of preschool children. Within the framework of this main purpose, the following questions were sought:

- Is there a significant difference between the pre-test-post-test and emotional intelligence scores of the experimental group?
- Is there a significant difference between the pre-test-post-test and emotional intelligence scores of the control group?
- Is there a significant difference between the post-test emotional intelligence scores of the experimental and control groups?

- What is the contribution of caricature-based applications to preschool children's emotional intelligence and communication skills?
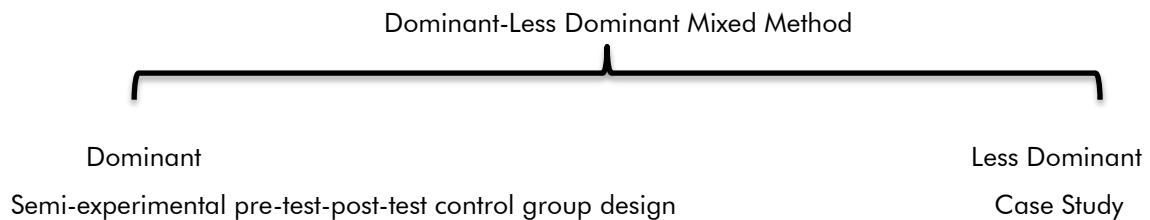
Method

Research Model

The dominant-less dominant mixed method was used in this study, in which quantitative and qualitative research designs were handled together. Tashakkori and Teddlie (1998) define the mixed method as data collection techniques and analysis. The mixed method includes both qualitative and quantitative methods for the research methods of a study.

Figure 1.

Research Design

Dominant-Less Dominant Mixed Method

Dominant   Less Dominant
Semi-experimental pre-test-post-test control group design   Case Study

In this study, to examine the effects of caricature-based applications on children's emotional intelligence, the dominant-less dominant mixed method design was preferred. Thus, both qualitative and quantitative data collection tools were used together. In this study, the quantitative method was preferred for the analysis of the forms prepared in the 1st, 2nd and 3rd sub-problems, and the qualitative method was preferred in the analysis of the 4th sub-problem. For this purpose, quasi-experimental paired pre-test-post-test control group design was used to investigate the effects of caricature applications on children's emotional intelligence. In addition, the opinions expressed by the children in the experimental group about the applications and the results of the observations made by the researcher during the application process were also evaluated within the scope of this case study and included in this study in a less dominant dimension.

Study group

In this study, 5-year-old children studying in two kindergartens in Tatvan district center of Bitlis were included in the study group of the study. In the quantitative dimension of this study in the study group, there were 40 children, 20 of them in the experimental group and 20 of them in the control group as shown in Table 1, to find answers to the 1st, 2nd and 3rd sub-problems. There were fourteen classes in total in the specified

schools. Two classes of these fourteen classes were included in this study. One class in the first kindergarten was determined as the experimental group and one in the second kindergarten as the control group. In this research, the "random sampling method", one of the probability-based sampling types, was used for the study group. The probability of being selected for each individual is the same in random sampling and the selection of any individual does not affect the other individual. To make sampling, the characteristics of the population must be well known and in a structure that allows for detailed examination (Buyukozturk, 2018).

Table 1.

Distribution of Children Participating in the Study according to Groups and Gender

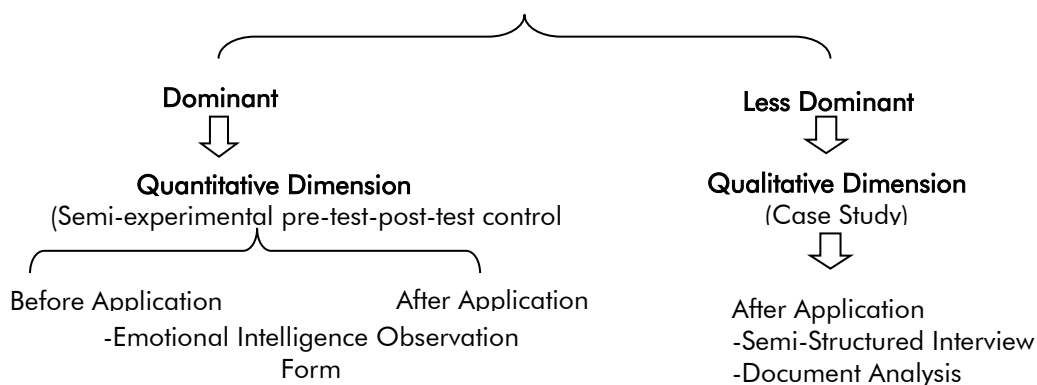| | Gender | | | | |
Group		Girl		Boy	
	n	f	%	f	%
Experimental Group	20	9	45	11	55
Control Group	20	12	60	8	40
Total	40	21	52,50	19	47,50

As seen in Table 1, 20 from the experimental group and 20 from the control group, 40 children participated totally in this study. Nine (45%) of the children in the experimental group were girls; 11 (55%) of them were boys. 12 (60%) of the children in the control group are girls; eight (40%) of them were boys.

Data Collection Tools

In this research, data were collected using quantitative and qualitative data collection tools. The data collection tools used in the quantitative and qualitative dimensions of the research are as follows:

Figure 2.

Data Collection Tools Used in the Research Design

Dominant

Quantitative Dimension
(Semi-experimental pre-test-post-test control

Before Application   After Application
-Emotional Intelligence Observation Form

Less Dominant

Qualitative Dimension
(Case Study)

After Application
-Semi-Structured Interview
-Document Analysis

As seen in Figure 2, while looking for answers to the 1st, 2nd and 3rd sub-problems in quantitative dimension, the "Emotional Intelligence Observation Form" developed by

the researchers was used before and after the application. For the 4th sub-problem, qualitative data were obtained from the semi-structured interview form prepared by the researchers after the application and through document analysis.

Emotional intelligence observation form

One of the data collection tools used in the quantitative dimension of the research is the observation form. Observation is a process that requires the use of all senses by examining the environment and taking notes without limitation at certain times. While observing, it is necessary to take notes about the participants in the environment. Because of the statements and movements of the participants during observation, the gestures and mimics they use are all a great resource for the researcher (Glesne, 2011). While observing, it is very important to be careful about taking notes about the participants and preventing the loss of the notes (Creswell, 2013). The use of a certain form during observation also affects the validity and reliability of the data collected regarding the observed event (Buyukozturk, 2018).

For the implementation of the 22-item "Emotional Intelligence Observation Form" developed in the study, the literature was scanned first and scales, questionnaires and forms related to emotional intelligence were examined. After reviewing the literature, items that will help observe the emotional intelligence of preschool children were written, taking into account their age levels. While writing the items, the cognitive development area, socio-emotional development area and the achievements in the self-care skills development area in the preschool education program were taken into consideration. The observation form was applied by conducting a pre-test with 15 children, and then expert opinions (1 pre-school department lecturer, 1 curriculum lecturer, 13 preschool teachers) were consulted to ensure the content validity of the items. The form was developed by making the necessary corrections according to the feedback obtained from the expert opinions. Emotional intelligence observation form was applied with 40 children totally in two kindergartens in Tatvan as a result of an 8-week application in April and May of the 2017/2018 academic year. The ratings on the observation form were given scores and digitized, and then these data were transferred to the computer and analyzed.

In the Emotional Intelligence Observation Form, the behaviours of preschool children, such as being aware of their emotions, coping with emotions, self-motivation, recognizing others' feelings and managing relationships, were tried to be determined. While performing observations in this research, it was carried out in a way that covered the lesson hours in which the experimental procedure was performed. The lesson observations made were recorded in the observation form in the form of observation notes. Since the observation environment did not change during the process, the observation environment was described in the first observation form. In other observations, changes in the environment were recorded only on the form. When recording on the form, the researchers used a triple rating on whether the children performed the specified behaviors. After the grading process, to contribute to the

validity and reliability of the observation results in the study, the observers' grades were transferred exactly under the heading of findings. In the analysis of the data, the findings of the researchers were supported by quotations from the observation records. The triangulation technique was preferred in this process, which was conducted to ensure reliability because the triangulation technique is used both to support the data in the observation form and to provide data diversity (Baskale, 2016). In this study, the data in the observation form were supported with the data obtained from the interview and document analysis.

In this study, the Emotional Intelligence Observation Form was applied to both the experimental and control groups, and after the first three weeks of the eight-week process, the behaviours of children to use their emotional intelligence were observed. In the observations made, the "significance" and "observability" features specified by Karasar (2005) were taken into consideration.

Semi-structured interview form

In this study, "Semi-Structured Interview Form" developed by the researchers was used to get the opinions of 20 participants about the caricature-based applications. In the interview form, information about the interviewer, the purpose of the interview, with whom the interview will be held and how the interview will be recorded are stated. Before applying the interview, the questions to be asked in the interview were determined.

Some points were considered during the implementation of the interview form. While writing the questions in the interview form, attention was paid to the fact that the questions were understandable, attention-grabbing and revealing different opinions. After all these processes were completed, interviews were conducted with 20 children on a voluntary basis.

The interviews were planned in an environment determined by the school administration and not to disturb other classes. Before the interviews, each child was asked whether or not to participate in the interview, and it was observed that all the children who were applied to the interview participated in the interview (Creswell, 2013). Interviews with children were noted by the researcher. Three criteria of Buyukozturk (2018, s. 162) were considered in the preparation of the interview questions. Care was taken to ensure that the interview questions were relevant to the purpose of the research, the selection of the participants suitable for the study, and the arrangement of the participants so that they would not have difficulty answering the interview questions. The interviews lasted approximately 10 minutes for each child.

Document analysis

Document analysis is the inclusion of written and oral materials in research to increase the validity of the research. Documents consist of not only written sources but also

pictures, videos or photographs. The validity and reliability of the studies increase using document analysis in research (Yildirim & Simsek, 2006). During the applications, photographs of the activities performed by the children in the experimental group were taken and the photographs were analyzed together with other data. Thus, the validity of the study was tried to be ensured using the data together. With the help of the data obtained through document analysis, the research is helped to reach its purpose (Aydogdu, Karamustafaoglu & Bulbul, 2017). In this study, the photographs of the activities performed by the children in the experimental group based on the caricature, the photographs taken during the activities and the notes for the observations taken by the researcher during the application were examined and evaluated by the researchers.

Analysis and Interpretation of Data

Analysis and interpretation of quantitative data

The data obtained from the "Emotional Intelligence Observation Form" applied as a pre-test and a post-test in the experimental and control groups were evaluated in a computer package program. In the observation form prepared about emotional intelligence, it was seen that the group size was less than 50. Thus, the Shapiro-Wilks value was considered in the analyses. As Yazıcıoglu and Erdogan (2004) stated, if the sample size is less than 50, the Shapiro-Wilks test is used to test its suitability for normal distribution. It was determined that the distributions are less than 0.05 as a result of the normality test examinations of the data in the research. As a result, the Wilcoxon Signed Ranks Test was used to compare the pre-test and post-test scores of the experimental and control groups and the Mann-Whitney U test was used to compare the scores of the children in the experimental and control groups. In addition, Cohen's d value was examined to determine the effect size of the experimental application in the study group of the research. In the study, the effect size of the difference between the emotional intelligence levels of children before and after the application on the groups was found in a wide range.

Analysis and interpretation of qualitative data

For the reliability of qualitative data, the data obtained were digitized, their frequency and percentages were calculated. Descriptive and content analysis were used in the data obtained from the semi-structured interview form. In this study, the data obtained from the interview form were arranged to consider the stages in the Miles & Huberman model, which is frequently used in qualitative research. This model consists of three stages: reducing data, presenting data and shaping results. Among the data, data related to each other were evaluated together.

In the qualitative data analysis of this study, direct and indirect quotations were made from interviews with children. The data obtained from the interviews were described and themes suitable for the data were created. Expert opinion was sought to ensure the

reliability of the determined themes. In line with the descriptions, the data were read and arranged with descriptive analysis. The frequencies and percentages were calculated and tabulated in line with the determined themes. The purpose of digitizing qualitative data is to increase the reliability of the data. For the validity of this study, the "credibility", which is evaluated as the criteria for representing the reality of the results obtained from the data, and the "transferability" feature of external validity, which helps to describe the results together with their details, were used.

When a direct quotation is made in the text, the citations made to facilitate the connection are given in square brackets with the (e.g.,) abbreviation.

Next to the abbreviation, the number of citations is given [e.g., 12]. While quoting, participants were given various codes (C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9…).

[12] ……………. Because he/she is both eating chocolate and crying. (C_{37})

Findings

Findings and Comments on the first Sub-Question of the Study

In this study, the findings and interpretations obtained from the quantitative data about the first sub-problem that was "Is there a significant difference between the pre-test and post-test emotional intelligence scores of the experimental group?" expressed as follows.
The average of the experimental group's pre-test and post-test "Emotional Intelligence Observation Form" scores is given in Table 2.

Table 2.

Wilcoxon Signed-Ranks Test Results Regarding the Pre-Test-Post-Test Emotional Intelligence of the Experimental Group

Post-test – Pre-test	n	Mean Rank	Sum of Rank	z	p
Negative Ranks	1[a]	6,00	6,00	-3, 584	.00*
Positive Ranks	18[b]	10,22	184,00		
Ties	1[c]				
TOTAL	20				

* $p \leq 0.05$

As seen in Table 2, there was a significant difference between the experimental group's pre-test and post-test emotional intelligence scores [z = -3.584, p = 0.00 ≤ 0.00]. When the mean rank and total of the difference scores were examined, it was seen that this difference is in favor of the positive ranks, i.e., the post-test. From this point of view, it can be said that caricature applications contribute to children's expressing their emotions comfortably, empathizing with their friends and questioning what they have learned in their cognitive structures.

It is also supported by the pictures drawn by the children that the caricature-based applications affect the emotional intelligence of children.
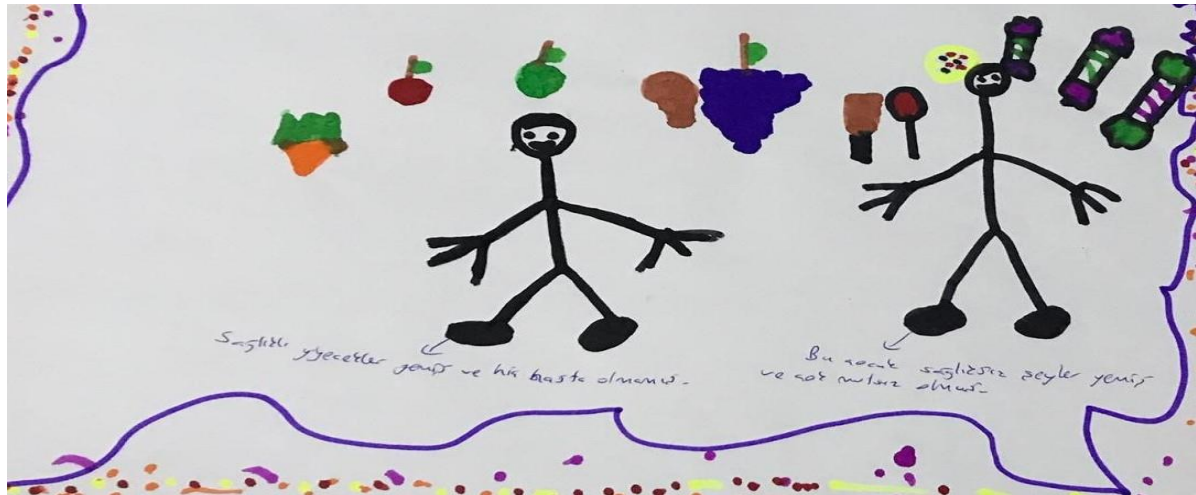
Picture 1.

Caricature Drawn by C1 Coded Child about Healthy Foods

Picture 2.

Caricature Drawn by C2 Coded Child about Healthy and Unhealthy Foods

Findings and Comments on the second Sub-Question of the Study

In this study, the findings and comments obtained from the quantitative data related to the second sub-problem that was "Is there a significant difference between the pre-test and post-test emotional intelligence scores of the control group?" expressed as follows. The mean of the scores obtained by the control group from the pre-test and post-test "Emotional Intelligence Observation Form" is given in Table 3.

Table 3.

Wilcoxon Signed Ranks Test Results Regarding the Pre-Test and Post-Test Emotional Intelligence of the Control Group

Post-test –Pre-test	n	Mean Rank	Sum of Rank	z	p
Negative Ranks	0[a]	,00	,00	- 3. 826	.00*
Pozitive Ranks	19[b]	10,00	190,00		
Ties	1[c]				
TOTAL	20				

* p≤0.05

As seen in Table 3, there is a significant difference between the control group pre-test and post-test emotional intelligence scores [z = -3.826, p = 0.00 ≤ 0.00]. When the mean rank and total of the difference scores are examined, it is seen that this difference is in favor of the positive ranks, i.e., the post-test. Based on this, it can be said that education based on the current preschool education program significantly increases children's emotional intelligence. The reason for this is that the concept and achievement dealt with in an activity are also related to the gains in other development areas since it is based on the fact that development is holistic.

Findings and Comments on the third Sub-Question of the Study

In this study, the findings and comments obtained from the quantitative data about the third sub-problem that was "Is there a significant difference between the post-test emotional intelligence scores of the experimental and control groups?" expressed as follows.

The mean of the scores obtained by the experimental and control groups in the post-test "Emotional Intelligence Form" is given in Table 4.

Table 4.

*Mann-Whitney U Test Results Regarding Post-Test Emotional Intelligence of Experimental and Control Groups*

Groups	n	Mean Rank	Sum of Rank	U	p	Cohen's d
Experimental	20	27,60	552,00	58,000	.00	*1,59 (Wide)
Control	20	13,40	268,00			

As seen in Table 4, there was a significant difference between the post-test emotional intelligence mean scores of the experimental and control groups [U = 58,000 p ≤ 0.00]. When the mean ranks were examined, it was seen that the mean (27.60) of the emotional intelligence of the children in the experimental group was higher than the children in the control group (13.40). When the effect size was evaluated, the effect size (1.59) of the difference between the emotional intelligence levels of the caricature-based applications was found in a wide effect range. From this point of view, it can be said that the studies on caricature-based applications were more effective than the studies conducted according to the current preschool education program. In other

words, children can express their feelings and thoughts more comfortably through drawing with caricature-based applications. To support this finding, quotations were made from the pictures of the students with the codes C_{14}, C_{16}, and C_{19}.
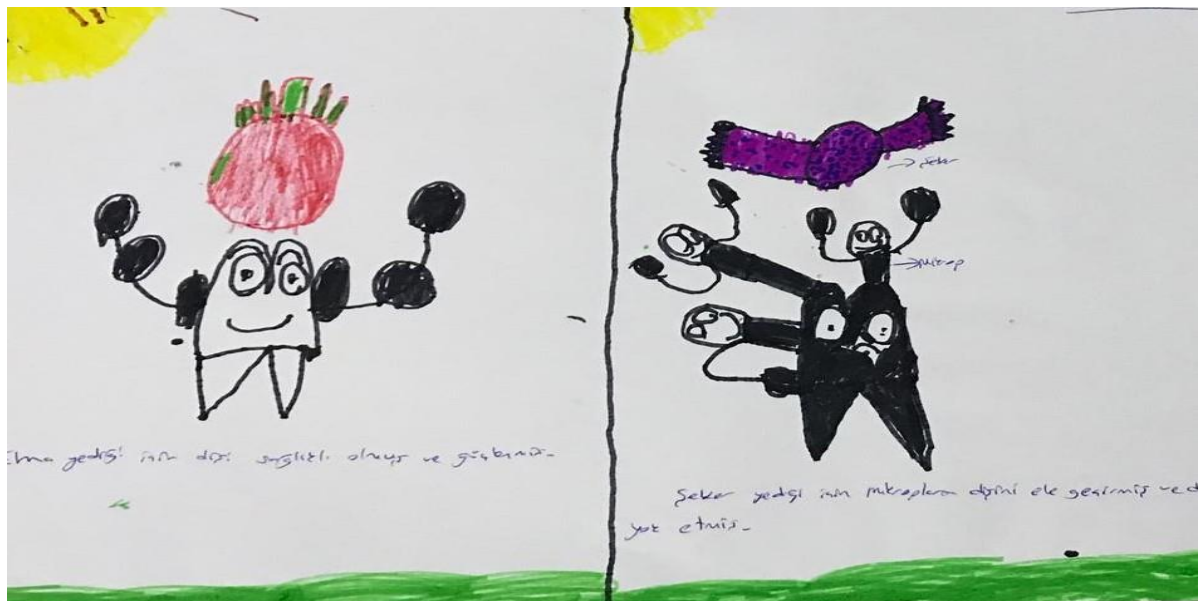
Picture 3.

Caricature Drawn by C14 Coded Child about Decayed Teeth Caused By an Unhealthy Diet
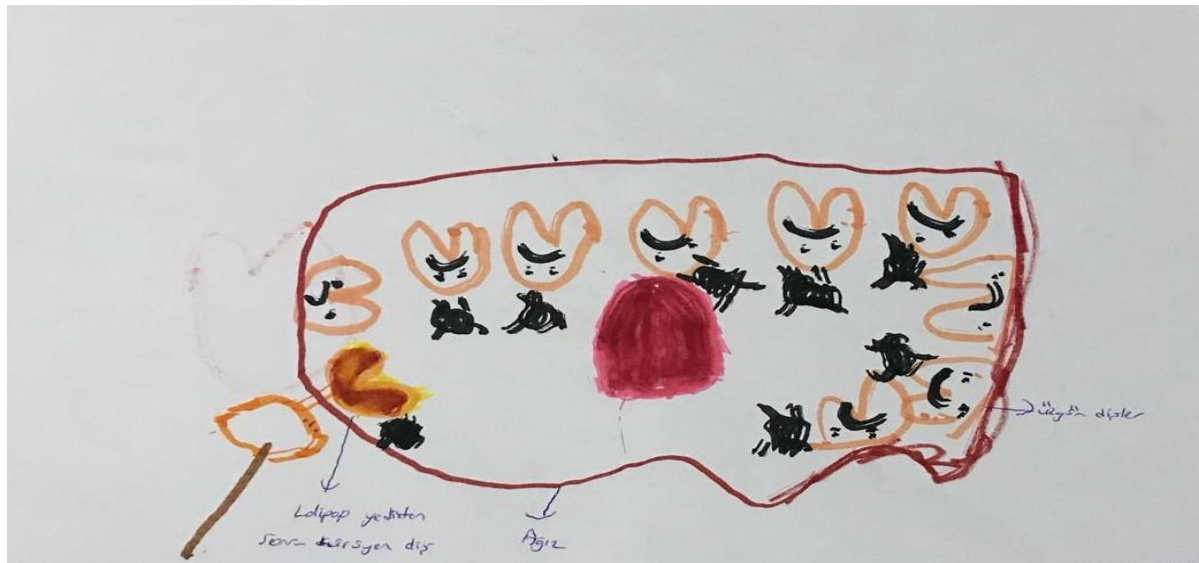
Picture 4.

Caricature Drawn by C16 Coded Child about the Structure of Healthy and Unhealthy Teeth

Picture 5.

Caricature Drawn by C19 Coded Child about Experiences as a Result of Unhealthy Eating

Findings and Comments on the fourth Sub-Question of the Study

In this research, the findings and comments obtained from the qualitative data related to the fourth sub-problem that was "What are caricature-based applications' contribution to emotional intelligence and communication skills of preschool children?" expressed as follows. The themes reached in the descriptive analysis results of the answers given to the questions in the semi-structured interview form by 20 interviewed students totally are shown in Table 5. The findings of the sub-categories and themes obtained as a result of the in-depth analysis of the descriptions by subjecting them to content analysis are presented in the text.

Table 5.

Descriptive Analysis Results Regarding the Effects of Caricature-Based Applications for Preschool Children

|		Coding	
Questions	Theme	f	%
Which caricature did attract your attention at the activities the most?	Caricature without text	12	60
	Informational caricature	3	15
	Colorful caricature	3	15
	Black and white caricature	2	10
	TOTAL	20	100
What did you understand from the caricatures shown?	Healthy and unhealthy diet	14	70
	Problem solving	6	30
	TOTAL	20	100
Which caricatures would you like to tell?	Funny caricature	16	80
	Interpretation based caricature	4	20
	TOTAL	20	100

As seen in Table 5, there were descriptive analysis results of interviews with 20 participants. As a result of the interviews conducted with the participants, the most striking caricatures were gathered under four themes: "without text", "informational", "color" and "black and white." Among these themes, the most emphasis was on the caricature without text. "The caricature without text" theme consisted of sub-themes, such as [caricatures with visual images in pictures (f = 10) and caricatures with plenty of pictures (f = 2)].

"Informational caricature" theme [with information about emotions in pictures (f = 3)]; "The colorful caricature" theme consisted of sub-themes, such as [the colors used in the colorful pictures are remarkable (f = 3)] and "the black-white caricature" theme [the pictures are linked (f = 1) and showed the change (f = 1)]. From this point of view, it can be said that caricatures in which visual images are used in caricature-based applications [eg 1-2-3-4-5-6-7-8-9] attract more attention of children.

[1] ………… Because he/she ate very healthy things and his/her muscles were out. (C$_4$)

Picture 6.

Caricature Drawn by C4 Coded Child about Milk's Beneficial For Teeth and Muscles
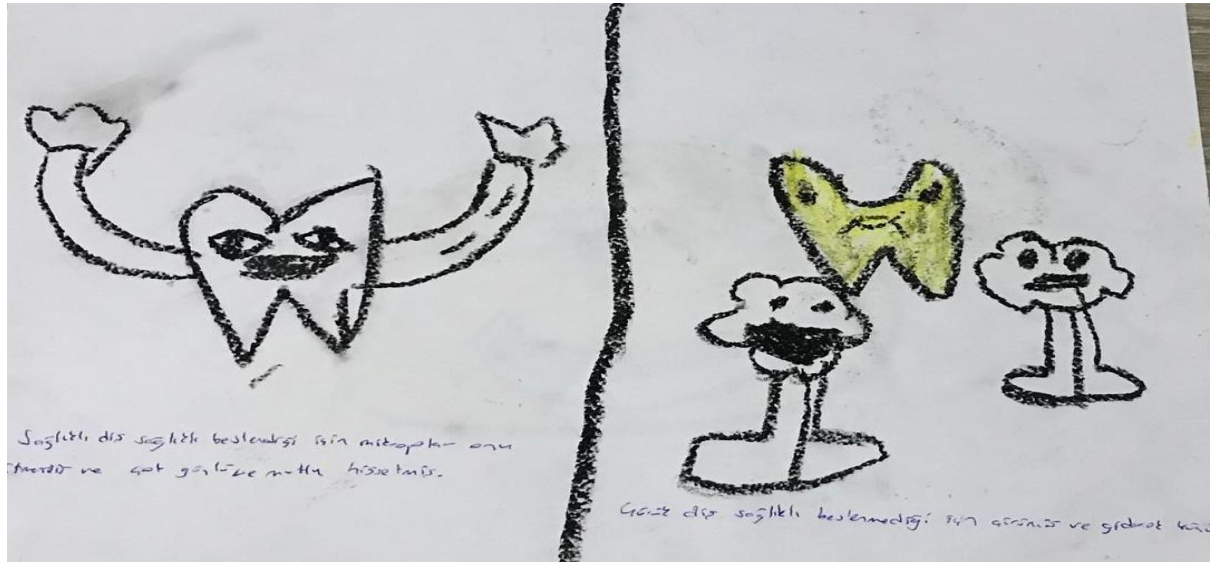
[2] ………… and a tooth with a milk carton in hand. Because they are so beautiful. (C$_6$)

[3] A tooth with a milk carton in hand. ……… .. strengthens teeth and muscles. (C$_7$)

Picture 7.

Caricature Drawn by C7 Coded Child about Fruits and Vegetables That Strengthen Teeth

[4] ……………... Because it is very beautiful. (C_9)

[5] ……………… strengthened and have muscles. (C_{10})

Picture 8.

Caricature Drawn by C10 Coded Child about the Benefit of Milk

[6] A tooth with a milk carton in hand. …………… very useful for our teeth. (C_{11})
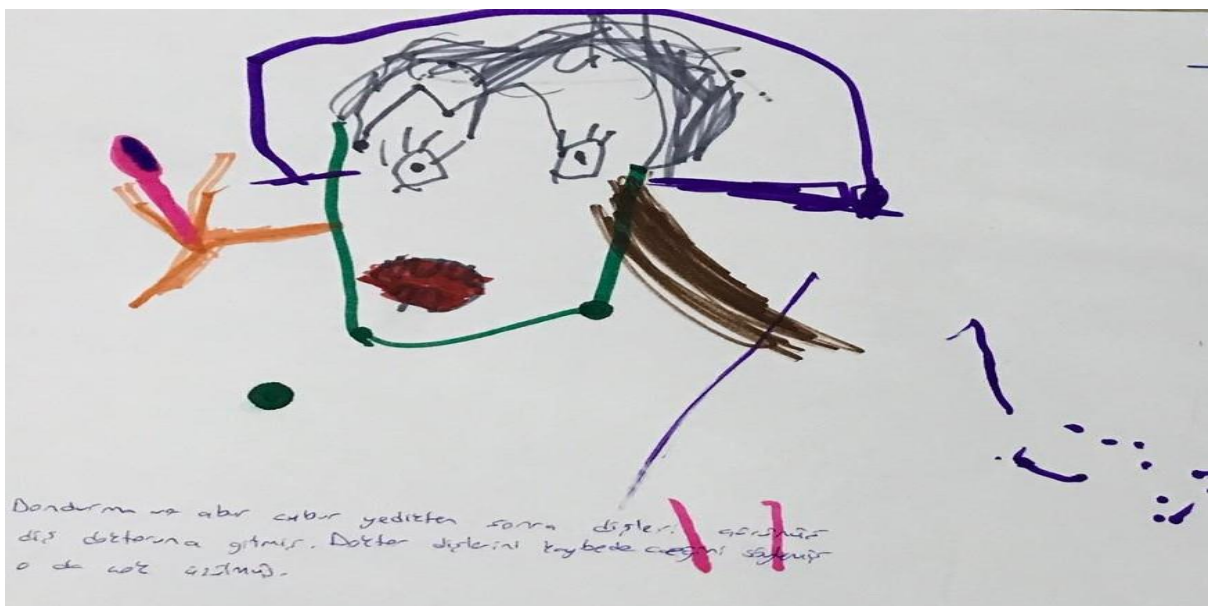
Picture 9.

Caricature Drawn by C11 Coded Child about Healthy Foods and Milk Affect Dental Health

[7] …………….. the tooth is both crying and eating chocolate. (C_{15})

Picture 10.

Caricature Drawn by C15 Coded Child about Chocolate and Junk Food Affecting Dental Health Badly

[8] A tooth with chocolate in hand and milk…………they are very beautiful. (C_6)

Picture 11.

Caricature Drawn by C18 Coded Child about Healthy Eating

[9] …………. Because he/she drinks healthy things. (C_7)

As seen in Table 5, 20 participants were asked about the topics they understood from the caricatures shown and the information they obtained. As a result of the interviews, two themes were created as healthy and unhealthy eating and problem solving. It consisted of sub-themes as healthy-unhealthy eating theme [[balanced diet (f = 12) and dental health (f = 2)] and problem solving theme [supporting effective decision making (f = 4) and helping to establish cause-effect relationship (f = 2)]. From this point of view, it can be said that children understand and comment on caricatures related to healthy-unhealthy eating more [e.g., 10-11-12-13-14-15-16-17-18-19-20-21] and they share their thoughts with their friends.

[10] We must eat healthy food, but not ……... (C_1)

[11] ……… and I understood unhealthy food. (C_9)

[12] I learned…….in Nutrition Clover. (C_{11})

Picture 12.

Caricature Drawn by C5 Coded Child about the Nutrition Clover

[13] Healthy and ………. foods. (C_{13})

Picture 13.

Caricature Drawn by C13 Coded Child about Healthy and Unhealthy Foods

[14] I learned about ………..food groups. (C_{20})

Picture 14.

Caricature Drawn by C20 Coded Child about the Food Groups

[15] When I eat healthily, I realized that ....was healthy when I ate junk food, I understood that is………. (C_2)

Picture 15.

Caricature Drawn by C2 Coded Child about the Result of a Healthy and Unhealthy Diet

[16] ……….. I understood what healthy foods are. (C_4)

[17] Healthy food ………. (C_6)

Picture 16.

Caricature Drawn by C6 Coded Child about Healthy Food

[18] ………… I understood our healthy diet. (C_9)

Picture 17.

Caricature Drawn by C9 Coded Child about the Situations That May Result from Healthy and Unhealthy Nutrition
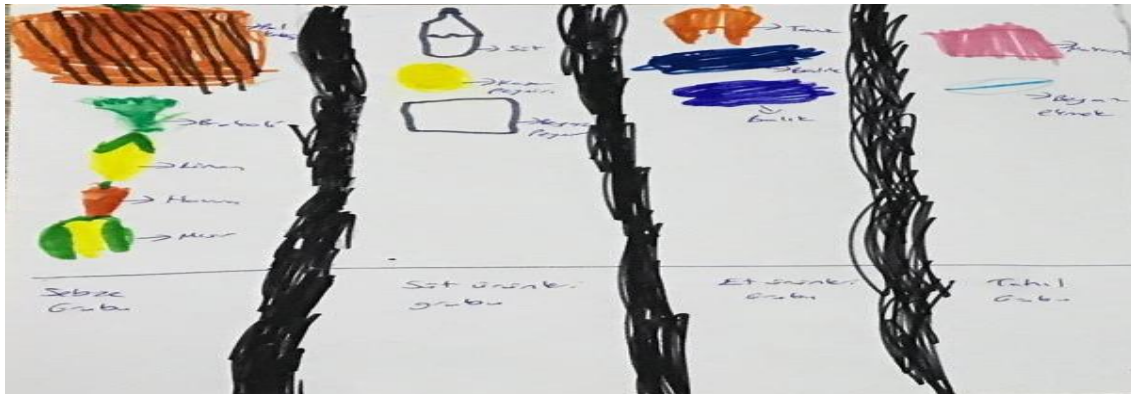

[19] …………… we get sick. (C_12)

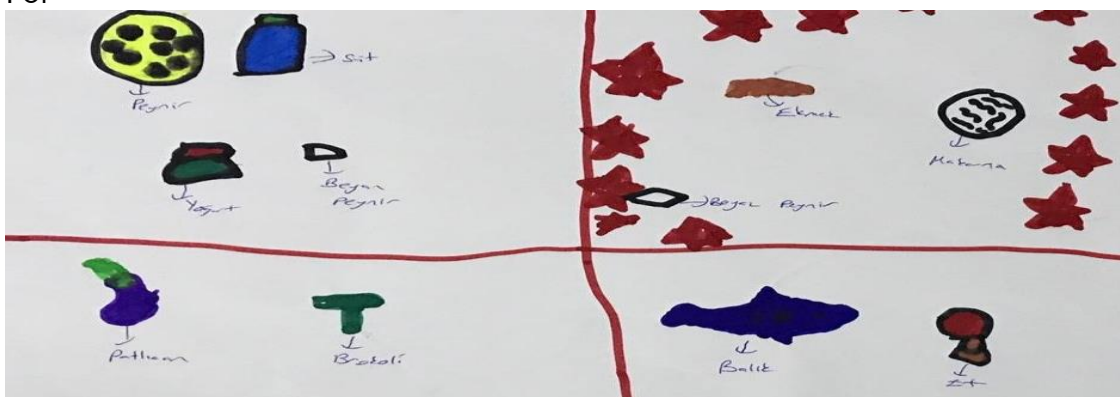[20] ………. we have to eat enough. We shouldn't choose food. (C_14)

Picture 18.

Caricature Drawn by C14 Coded Child about a Balanced Diet

[21] Milk, cheese, eggs make us ……... (C_{15})

Picture 19.

Cartoon Drawn by C15 Coded Child about That Milk, Cheese And Egg Are Beneficial For   Health

As seen in Table 5, 20 participants were asked the caricatures they wanted to tell. As a result of the interviews, two themes were created: funny and interpretation-based caricatures.

Funny caricature theme consisted of sub-themes, such as [Caricatures that appeal to children and attract their attention are more entertained (f = 12) and the humor used in caricatures was funny as well as encouraging children to think (f = 4)] and interpretation-based caricatures theme consisted of sub-themes, such as [The children described the events in the caricatures in connection with each other (f = 3) and try to reach conclusions by guessing about the events (f = 1)]. Based on this, it can be said that children want to tell more about caricatures that make them laugh and entertain [e.g., 22-23-24-25-26-27-28-29-30-31-32-33].

[22] …………. She has eaten useful foods. (C_{12})

Picture 20.

Caricature Drawn by C12 Coded Child about Beneficial Foods for Health

[23] A tooth holding a milk carton. Tooth drank milk …… …… (C_{15})

[24] The girl with healthy food around her. …………… and was healthy. (C_{18})

Picture 21.

Caricature Drawn by C18 Coded Child about What Can Happen As A Result Of Healthy Eating

[25] …………… Tooth drinks milk and becomes very strong. (C_7)

[26] …….. It was very interesting how the teeth felt according to what they ate. (C_2)

Picture 22.

Caricature Drawn by C3 Coded Child about How Teeth Feel as a Result of Eating Foods

[27] The tooth with milk in its hand. ……… The tooth was both white and healthy and strengthened. (C_4)

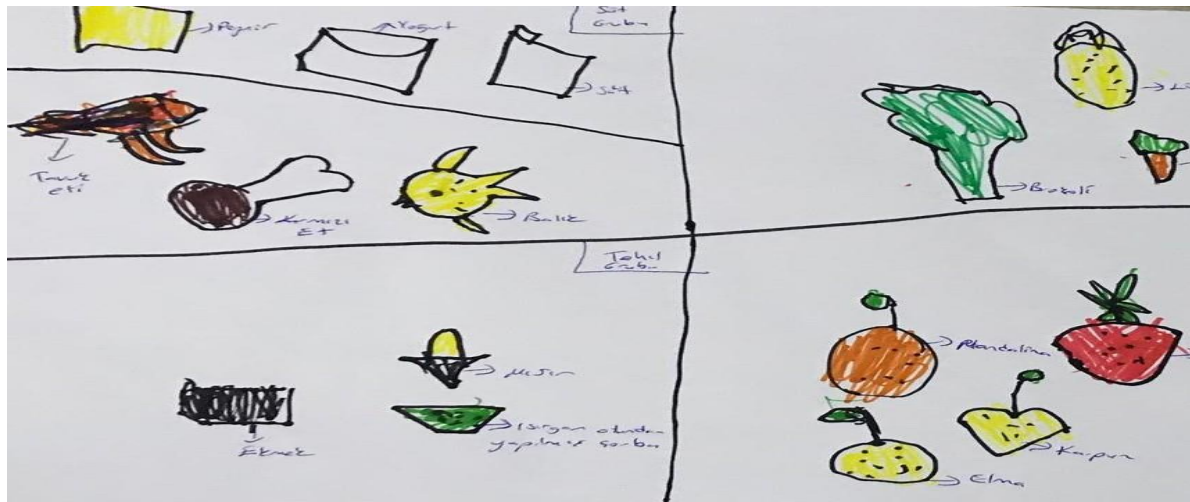[28] ………… ... Because he/she will eat his favourite foods. (C_{11})

Picture 23.

Caricature Drawn by C17 Coded Child about He Child Who Eats Healthy Food Is Happy

[29] …………. Each food group is different from each other. (C_{19})

Picture 24.

Caricature Drawn by C19 Coded Child about Food Groups Being Different From Each Other

[30] Wheel of Fortune...Because there is information about both dental health and nutrition. (C_9)

Picture 25.

Caricature Designed in the Style of a Wheel of Fortune

[31] A tooth with a milk carton in hand ……... and very healthy, as well as strong. (C_{13})

[32] Nutrition clover……. all foods are healthy. (C_{18})

Picture 26.

Caricature Drawn by C18 Coded Child about the Foods Being in Alimentary Clover Are Healthy

[33] ……….. She ate both vegetables and meat and became a strong, healthy girl. (C$_8$)

Picture 27.

Caricature Drawn by C8 Coded Child about a Healthy and Balanced Diet

It was seen that a healthy diet was emphasized more in the caricatures drawn and the problems that might arise in case of an unhealthy diet were mentioned. In other words, it can be said that children prioritized a balanced diet in caricature drawings and emphasized the negative effects of harmful foods on human health.

Discussion, Conclusion and Suggestions

In this study, there is a significant difference between the experimental group's pre-test and post-test emotional intelligence scores in favor of the post-test. It has been concluded that caricature-based applications increase children's attention towards the learning environment and make the learning environment fun. At the same time, the children in the experimental group made meaningful and visualized the concepts they could not concretize with the caricature activities carried out in the classroom. In this way, children attended the activities willingly and expressed their feelings and thoughts comfortably in these environments. The study of İnel, Evrekli and Balim (2011) supports this result. According to İnel, Evrekli and Balım (2011), the use of caricature attracts the attention of children and increases their participation in the lesson. This participation enables them to structure their knowledge, increase their sensitivity towards the environment, and above all, change their perspective towards them (Topkaya, 2016). Because children perceive the world concretely, starting from preschool. They explore the world by interacting with the environment, asking questions, touching objects, observing, and modeling the behavior of others (Morris, Merrit, Fairclough, Birrell, & Howit, 2007). Here, caricatures are educational tools that help children discover and learn the world they live in (Keogh & Naylor, 1999; Akengin & İbrahimoğlu, 2010; Atasoy & Zoroglu, 2014). Thus, these tools are recommended to be used in all age groups, starting with pre-school education. For example, Cetin (2012) states that when the subject about environmental problems in the Science course is explained with caricature applications, children's interest in the lesson increases, they develop a positive attitude and their awareness towards the environment increases. Similarly, in Kaya, Köse and Konu (2016) explain that caricatures embody abstract concepts in the biology lesson and that the lesson becomes more meaningful with caricature applications. It provides a positive attitude towards learning meaningful information for the child (Cakır & Aydogdu, 2016). This positive attitude is seen to be more effective in lessons, such as mathematics that include abstract subjects and hard gains to learn. According to Sexton, Gervasoni and Bradenburg (2009), studies conducted with caricatures in Mathematics lesson increase children's interest in this lesson. It reduces the negative attitudes of children towards the lesson. Many abstract concepts and topics become concrete with caricature applications.

In this study, there is a significant difference between the pre-test and post-test emotional intelligence scores of the control group in favor of the post-test. Practices and activities were performed to the control group within the framework of the current education program in the research. As a result, it was concluded that the activities in the education program contributed to the emotional intelligence of children in the control group. As it is known, the preschool education program considers all the developmental characteristics of the child, can be stretched according to the level of the children, different themes are used, and provide daily life experiences (Koç Akran & Kocaman, 2018). Since the preschool education program is a program in which

development areas are supported and teachers are guided, children's development is also positively affected by this situation (MEB, 2013). In addition, the education program cares about family support in the activities (Temiz, 2014). The family is expected to participate in the activities that children do or will do in the learning process. This situation contributes positively to children's motivation levels, empathy skills and cooperation (Bacanli, 2007). It can be said that the current preschool education program helps children to use emotional intelligence because of these features.

In this study, there is a significant difference between the post-test emotional intelligence scores of the experimental and control groups in favor of the experimental group. It was concluded that the children in the experimental group in which the caricature-based applications were made expressed themselves better than the children who were subjected to the current education program practices and conveyed their thoughts about the caricatures they saw to their immediate environment. Given that children express their thoughts comfortably affects their emotional intelligence positively because children establish relationships between the concepts they learn and make sense of the stimuli coming from the environment with caricature applications (Secgin, Yalvac, & Cetin, 2010). Sometimes, caricatures help children establish a cause-effect relationship between events, make comparisons and internalize what is told (Ozturk & Ozkan, 2016). Through such learning, children also relate and transfer their knowledge to everyday life. This is expressed as the realization of meaningful learning (Taş, 2013; Katipoğlu, Eken, & Korbay, 2017). In a process where meaningful learning takes place, the child uses his emotional intelligence. Children use and control their emotions and mental skills with their emotional intelligence (Stoico & Roco, 2013). He/she is concerned with the positive aspects of life, not the negativities (Barut, 2015). Children who attach a positive meaning to life achieve their goals quickly. He/she performs life-long learning in a planned and programmed manner (Akkaya, 2011; Denham, Bassett, & Zinsser, 2012).

Caricature applications contribute to children's language development, problem solving skills and learning styles. He/she earns this contribution with different caricature types. Among these, the caricatures that children pay the most attention to are unwritten and funny ones. Because reading and writing are not among the basic language skills of preschool children. Children use listening and speaking skills a lot in the learning environment. Thus, unwritten, funny and comic caricatures attract their attention in caricature-based applications. In other words, children perceive depicted symbols through pictures with caricature applications and interpret them as they see with the perception formed in their minds (Tok & Sevinc, 2010; Rai, Waskel, Saklle, Dixit, & Mahore, 2016). Children who share their thoughts and comments with other people socialize in this way (Calısir, 2011). Socialization is seen as an important factor for the use and development of emotional intelligence because socializing children use the interpersonal intelligence included in the multiple intelligence model effectively. He/she can find solutions to the problems of other individuals around him/her with an effective communication process. He/she criticizes the events, empathizes and gives

perspective to the events with different thoughts (Morris, Merrit, Fairclough, Birrell, & Howit, 2007). In other words, because the child was not socialized when he/she was first born, he/she starts socializing as a result of his/her experiences and tries to communicate with his/her environment (Akkaya, 2011). As children begin to socialize, they learn their own culture and the rules of the social group they belong to by adapting to their own culture (Habib & Soliman, 2015). During the socialization process, the social ties between children also become stronger as they exchange emotions with each other (Ekinci Vural, 2006). Thanks to these ties, he/she produces instant solutions to the problems he/she encounters. Sometimes he/she works in cooperation with the support of his/her close environment. In the age where technology and knowledge are rapidly developing, there is a need for individuals who are productive, able to manage their emotions and work in collaboration. The training of such individuals starts formally with preschool education. Preschool education is the basis of children's further education (Arslan & Güven, 2015; Gursoy, 2016).

As a result, caricature-based applications enable children to develop skills, such as self-assessment, communication, problem solving and empathy. Children discover their performances using their intrinsic intelligence with these skills and see the successful/unsuccessful aspects. At the same time, children create creative products and ideas using their imaginations with caricature-based applications. Thus, children's sense of humor improves with a visual learning process. All these skills and learning ways are thought to positively affect the emotional intelligence of preschool children.

The following suggestions are presented in line with the results obtained in this research:

- Teachers can include more visual and educational materials in learning environments that will improve children's emotional intelligence and communication skills.
- The effects of caricature-based applications on different development areas can be investigated.
- The effects of caricature-based applications on the students' emotional intelligence studying at different educational levels can be investigated.
- Mixed studies can be conducted on what kind of skills caricature-based applications develop in students.

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